AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A multi-channel optical communication system comprising:

an optical transmitting apparatus including

a retroreflector reflecting incident light in the direction of a source of the incident light and

a modulator for modulating the light reflected by the retroreflector according to a transmission signal; and

an optical receiving apparatus including

a light emitter emitting light and

a demodulator for demodulating from the light emitted from the light emitter and reflected from the retroreflector the transmission signal modulated by the modulator,

the modulator including

a plurality of reflection condition control devices arranged on a reflection plane of the retroreflector and capable of controlling optical total reflection independently of each other and

a driver for separately controlling each of the reflection condition control devices according to the transmission signal, and

the demodulator including

a photoreceiver having a plurality of photo receptors arranged correspondingly to arrangement of the plurality of reflection condition control devices for receiving the reflected light and

a signal demodulating circuit reconstructing the transmission signal from respective outputs of the plurality of photoreceptors.

2. (Original) The multi-channel optical communication system according to claim 1, wherein

each of the reflection condition control devices includes a digital microactuator provided on the rear side of a transparent plate constituting the reflection plane of the retroreflector and having a control plane according to an applied signal to change its direction, the direction of the control plane being changed to control reflection from the rear side of the transparent plate.

3. (Original) The multi-channel optical communication system according to claim 1, wherein

each of the reflection condition control devices includes a digital micromirror device having a reflection plane changing its direction according to an applied voltage.

4. (Original) The multi-channel optical communication system according to claim 1, wherein

each of the reflection condition control devices includes a magnetic material provided on the reflection plane and enclosed in a transparent capsule and an exciting unit for changing distribution of optical reflectance on the reflection condition control devices by moving the magnetic material in the transparent capsule by means of a magnetic force.

5. (Currently Amended) The multi-channel optical communication system according to claim 1, wherein

each of the reflection condition control devices includes an optical drive element provided to face a total reflection plane of the retroreflector from the direction opposite to the direction of a source of light incident on the total reflection plane of the retroreflector and changing its shape, in response to radiation of light with [[a]] specific wavelengths, between a first shape closely fit onto the total reflection plane and a second shape forming a gap between itself and the total reflection plane, reflection from the total reflection plane being controlled by radiation of the light having the specific wavelengths to the optical drive element.

6. (Currently Amended) An optical transmitting apparatus for a multi-channel optical communication system comprising:

a retroreflector reflecting incident light in the direction of a source of the incident light; and

a modulator for modulating the light reflected by the retroreflector according to a transmission signal,

the modulator including

a plurality of reflection condition control devices arranged on a reflection plane of the retroreflector and capable of controlling total optical reflection independently of each other and

a driver for separately controlling each of the reflection condition control devices according to the transmission signal.

7. (Original) The optical transmitting apparatus for a multi-channel optical communication system according to claim 6, wherein

the plurality of reflection condition control devices are divided into a plurality of groups, and

each of the reflection condition control devices of the plurality of groups are respectively driven by a plurality of the transmission signals different from each other.

8. (Original) The optical transmitting apparatus for a multi-channel optical communication system according to claim 6, wherein

each of the reflection condition control devices includes a digital micro actuator provided on the rear side of a transparent plate constituting the reflection plane of the retroreflector and having a control plane according to an applied signal to change its direction, the direction of the control plane being changed to control reflection from the rear side of the transparent plate.

9. (Original) The optical transmitting apparatus for a multi-channel optical communication system according to claim 7, wherein

each of the reflection condition control devices includes a digital microactuator provided on the rear side of a transparent plate constituting the reflection plane of the retroreflector and having a control plane according to an applied signal to change its direction, the direction of the control plane being changed to control reflection from the rear side of the transparent plate.

10. (Original) The optical transmitting apparatus for a multi-channel optical communication system according to claim 6, wherein

each of the reflection condition control devices includes a digital micromirror device having a reflection plane changing its direction according to an applied voltage, and the

reflection plane of the digital micromirror device is controllable in either of a first direction where the reflection plane of the digital micro mirror device is included in the reflection plane of the retroreflector or a second direction where the reflection plane of the digital micromirror device is not included in the reflection plane of the retroreflector.

11. (Original) The optical transmitting apparatus for a multi-channel optical communication system according to claim 7, wherein

each of the reflection condition control devices includes a digital micromirror device having a reflection plane changing its direction according to an applied voltage, and the reflection plane of the digital micromirror device is controllable in either of a first direction where the reflection plane of the digital micromirror device is included in the reflection plane of the retroreflector or a second direction where the reflection plane of the digital micro mirror device is not included in the reflection plane of the retroreflector.

12. (Original) The optical transmitting apparatus for a multi-channel optical communication system according to claim 10, wherein

the retroreflector is formed of first, second and third planes orthogonal to each other,

the first plane and the second plane are reflection planes, and

the third plane is constituted by the reflection plane of the digital micromirror device facing in the first direction.

13. (Original) The optical transmitting apparatus for a multi-channel optical communication system according to claim 12, wherein

a plurality of the digital micromirror devices are arranged on a substrate provided in a direction orthogonal to the first and second planes.

14. (Original) The optical transmitting apparatus for a multi-channel optical communication system according to claim 6, wherein

each of the reflection condition control devices includes a magnetic material provided on the reflection plane and enclosed in a transparent capsule and an exciting unit for changing distribution of optical reflectance on the reflection condition control devices by moving the magnetic material in the transparent capsule by means of a magnetic force.

15. (Original) The optical transmitting apparatus for a multi-channel optical communication system according to claim 7, wherein

each of the reflection condition control devices includes a magnetic material provided on the reflection plane and enclosed in a transparent capsule and an exciting unit for changing distribution of optical reflectance on the reflection condition control devices by moving the magnetic material in the transparent capsule by means of a magnetic force.

16. (Currently Amended) The optical transmitting apparatus for a multi-channel optical communication system according to claim 6, wherein

each of the reflection condition control devices includes an optical drive element provided on the rear side of a transparent plate constituting the reflection plane of the retroreflector and changing its shape, in response to radiation of light with [[a]] specific ~~wavelength~~ wavelengths, between a first shape closely fit onto the rear side and a second shape

forming a gap between itself and the rear side, reflection from the rear side of the transparent plate being controlled by radiation of the light having the specific wavelengths to the optical drive element.

17. (Currently Amended) The optical transmitting apparatus for a multi-channel optical communication system according to claim 7, wherein

each of the reflection condition control devices includes an optical drive element provided on the rear side of a transparent plate constituting the reflection plane of the retroreflector and changing its shape, in response to radiation of light with [[a]] specific ~~wavelength~~ wavelengths, between a first shape closely fit onto the rear side and a second shape forming a gap between itself and the rear side, reflection from the rear side of the transparent plate being controlled by radiation of the light having the specific wavelengths to the optical drive element.

18. (Original) An optical receiving apparatus for a multi-channel optical communication system comprising:

a photoreceiver receiving a bundle of lights containing a plurality of light beams modulated respectively by separate signals and having a plurality of photo receptors arranged correspondingly to an arrangement of the plurality of light beams; and

a demodulator for demodulating from respective outputs of the plurality of photoreceptors a signal transmitted by each of the plurality of light beams.

19. (Original) The optical receiving apparatus for a multi-channel optical communication system according to claim 18, wherein

the plurality of photoreceptors are divided into a plurality of groups, and

the optical receiving apparatus further comprises a signal demodulating circuit reconstructing a transmission signal for each of the plurality of groups.